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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/633,869	08/07/2000	Hongyong Zhang	0756-2100	6768
<div>7590 Jeffrey L Costellia Nixon Peabody LLP 8180 Greensboro Drive Suite 800 McLean, VA 22102</div>			<div>EXAMINER GHYKA, ALEXANDER G</div>	
			<div>ART UNIT 2812</div>	<div>PAPER NUMBER</div>
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		04/27/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/633,869

Applicant(s)

ZHANG ET AL.

Examiner

Alexander G. Ghyska

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 31-36 and 67-70 is/are allowed.
- 6) ☒ Claim(s) 1,8-10,12,13,19,21,23,24,30,37,44,46,48,49,55,57,59 and 60 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

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Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 August 0200 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

Continuation of Disposition of Claims: Claims pending in the application are 1,8-10,12,13,19,21,23,24,30-37,44,46,48,49,55,57,59,60 and 66-70.

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DETAILED ACTION

The decision by the Board of Patent Appeals and Interferences of 3/09/2007 has been noted. Claims 1, 8-10, 12-13, 19, 21, 23-24, 30, 31-36, 37, 44, 46, 48-49, 55, 57, 59-60, 66-70 are under consideration. Claims 31-36 and 67-70 are allowed for the reasons as discussed below.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 10, 12, 13, 37, 46, 48-49 are rejected under 35 U.S.C. 102(e) as being anticipated by Chae (US 5,432,122).

The present Claims generally require a method for fabricating a semiconductor device having at least one thin film transistor comprising a channel region and a gate electrode, comprising the steps of : forming a semiconductor film comprising an amorphous silicon over a substrate; and irradiating said semiconductor film with a laser light along a scan direction, wherein said scan direction is parallel to said channel region.

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With respect to Claims 1, 10, 37 and 46, Chae discloses a method of fabricating a semiconductor device having at least one thin film transistor comprising a channel region and a gate electrode, comprising the steps of: forming a structure comprising an amorphous semiconductor thin film separated by a gate insulating film from a gate electrode on an insulating substrate; irradiating said amorphous semiconducting film with a laser light to convert it to a polycrystalline film wherein said laser beam has a rectangular shaped cross section at said substrate, while relatively moving said laser beam along a scan direction across the substrate. See column 3, lines 45-68, and Figure 7. Moreover, Chae disclose the scanning direction is parallel to the channel region. See Figure 7.

With respect to Claims 12 and 48, the irradiating step comprises moving the laser light in a scanning direction. See Figure 7.

With respect to Claims 13 and 49, Chae et al disclose partially overlapping irradiation of the laser light. . See column 6, lines 25-32.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 8, 18, 44 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chae (US 5,432,122) as applied to claims 1, 10, 12, 13, 37, 46, 48-49 above, and further in view of Imahashi et al (US 5,413,958).

Chae is relied upon as discussed above.

However, Chae does not disclose the use of the thin film transistor as a column driver (or source driver as referred to by the present Specification) or a scan driver (or a gate driver as referred to by the present Specification).

Imahashi et al disclose a method for manufacturing a liquid crystal display substrate, and disclose the use of a thin film transistor as a column driver or a scan driver. See column 2, lines 5-35.

It would have been obvious for one of ordinary skill in the art, at the time of the invention, to use the thin film transistor of Chae et al as a column driver or a scan driver, as Imahashi et al generally disclose the use of thin film transistors as column drivers or scan drivers. The use of a known device, thin film transistor, for

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its known utility, scan or column driver, would have been obvious to one of ordinary skill in the art in view of the cited references.

Claims 21, 23, 24, 57, 59 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chae (US 5,432,122) as applied to claims 1, 10, 12, 13, 37, 46, 48-49 above, and further in view of Weiner et al (US 5,565,377).

Chae is relied upon as discussed above.

However, Chae does not disclose implanting a dopant into the substrate before the laser irradiation.

Weiner et al disclose a process for forming retrograde and oscillatory profiles in crystalline and polycrystalline silicon. Weiner et al disclose implanting a dopant into the substrate before the laser irradiation. See Weiner et al, column 1, lines 18-22.

It would have been obvious to one of ordinary skill in the art to implant a dopant in the substrate of Chae before laser irradiation, for its known benefit of modifying the substrate as disclosed by the Weiner reference. As the introduction of dopants is known in the art of making semiconductors as disclosed by Weiner et al, a *prima facie* case of obviousness is established.

Claims 30 and 66 rejected under 35 U.S.C. 103(a) as being unpatentable over Chae (US 5,432,122) and Weiner et al (US 5,565,377) as applied to claims 21, 23, 24, 57, 59 and 60 above, and further in view of Imahashi et al (US 5,413,958).

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Chae and Weiner et al are relied upon as discussed above.

However, Chae and Weiner et al do not disclose the use of the thin film transistor as a column driver (or source driver as referred to by the present Specification) or a scan driver (or a gate driver as referred to by the present Specification).

Imahashi et al disclose a method for manufacturing a liquid crystal display substrate, and disclose the use of a thin film transistor as a column driver or a scan driver. See column 2, lines 5-35.

It would have been obvious for one of ordinary skill in the art, at the time of the invention, to use the thin film transistor of Chae et al and Weiner et al as a column driver or a scan driver, as Imahashi et al generally disclose the use of thin film transistors as column drivers or scan drivers. The use of a known device, thin film transistor, for its known utility, scan or column driver, would have been obvious to one of ordinary skill in the art in view of the cited references.

Allowable Subject Matter

Claims 31-36 and 67-70 are allowed.

The following is an examiner's statement of reasons for allowance: The cited prior does not anticipate or make obvious, *inter alia*, while relatively moving said energy beam along a scan which is orthogonal to the gate electrode and is parallel to the channel region, as required by the afore mentioned Claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should

preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander G. Ghyka whose telephone number is (571) 272-1669. The examiner can normally be reached on Monday through Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AGG
April 18, 2007

ALEXANDER GHYKA
PRIMARY EXAMINER

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